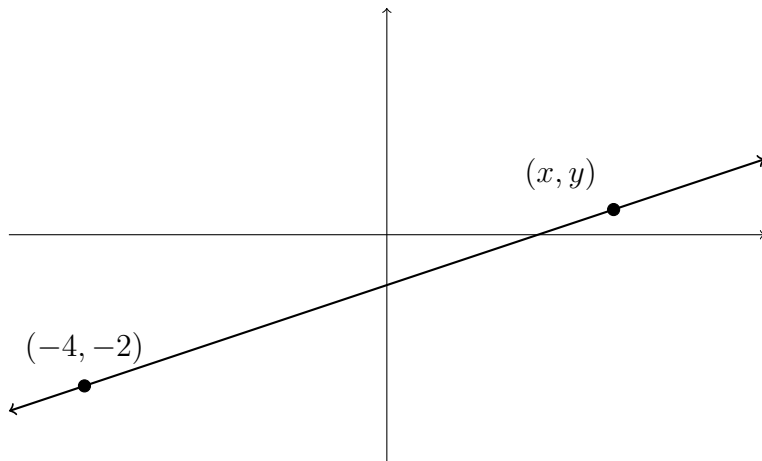


Algebra

Activity 4b - Slope and Equations of Lines

Let L be the line that contains the point $(-4, -2)$ and has a slope of $m = \frac{1}{3}$



1. Find three other points on the line.

Describe how you found them.

2.
 - There is a point on the line L , with a y -coordinate of 4, find the x -coordinate.
 - There is a point on the line L , with a y -coordinate of 3, find the x -coordinate.
 - There is a point on the line L , with a y -coordinate of 2, find the x -coordinate.

Describe the process to find the x -coordinate, if you are given the y -coordinate.

3.
 - There is a point on the line L , with an x -coordinate of 2, find the y -coordinate.
 - There is a point on the line L , with an x -coordinate of 1, find the y -coordinate.
 - There is a point on the line L , with an x -coordinate of 0, find the y -coordinate.

Describe the process to find the y -coordinate, if you are given the x -coordinate.

4. Write an equation, using the slope formula, which says that the slope between the point $(-4, -2)$ and the arbitrary point (x, y) is $\frac{1}{3}$.

Then, solve this equation for y .

Also solve this equation for x .

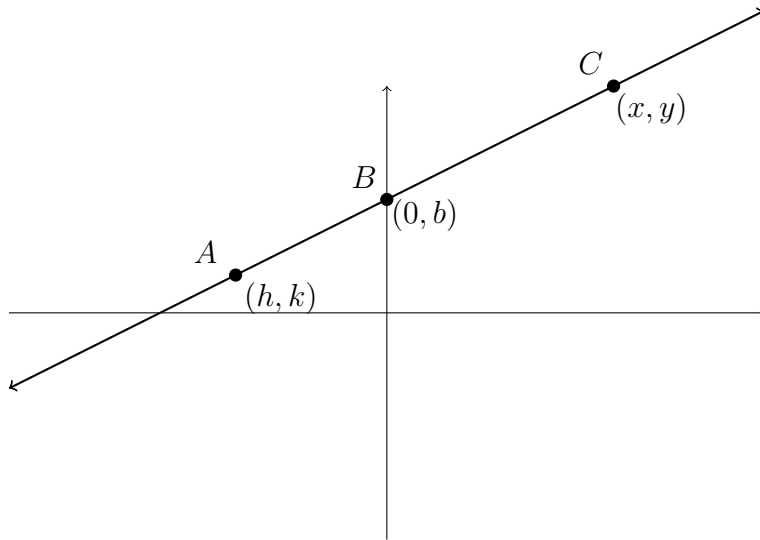
Do these equations match the descriptions in parts 3) and 2) above?

5. Find the y -intercept of the line that passes through the point $(-4, -2)$ and has a slope of $m = \frac{1}{3}$
6. Find the y -intercept of the line that passes through the point (h, k) and has a slope of m

Algebra

Activity 4b - Slope and Equations of Lines

Part II



In order for three points, A , B and C to be on a straight line, the slope from A to B must equal the slope from B to C , must equal the slope from A to C . However, we don't actually need to check all three. If the slope from A to B equals the slope from B to C , then it must also equal the slope from A to C . Show that this last statement is true by doing the following:

1. Write a formula for the slope from A to B in the picture above.
2. Write a formula for the slope from B to C in the picture above.
3. Set the two expressions above equal to each other. Solve this equation for y to arrive at the slope-intercept form of the equation for this line.
4. Write a formula for the slope from A to C in the picture above.
5. Set the expression in (4) equal to the expression in (2). Solve this equation for y to arrive at the slope-intercept form of the equation for this line.